Inventor: James J. Fitzgibbon.
Serial No.: 09/925,867
Filed: August 9, 2001

Atty Dkt. No. 71860/5569
Date Mailed: January 12, 2005
KHS/ph

Amendment Transmittal (2 pgs.) In duplicate;
Response to Office Action dated July 14, 2004 (21 pgs.);
Request for Approval of Corrected Drawings with 4 sheets;
Petition for Extension of Time in duplicate;
Return Receipt Postcard.

Hon. Commissioner of Patents and Trademarks

Sir:

Please acknowledge receipt of the above-identified documents by applying the Patent and Trademark Office receipt stamp hereto and mailing this card.

Respectfully,

FITCH, EVEN, TABIN & FLANNERY

Inventor: James J. Fitzgibbon.
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Respectfully,

FITCH, EVEN, TABIN & FLANNERY

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appln No.:	09/925,867
Filed:	August 9, 2001
Applicant(s):	James J. Fitzgibbon
Title:	METHOD AND APPARATUS FOR A ROLLING CODE LEARNING TRANSMITTER
Art Unit:	2122
Examiner:	
Attorney Docket:	71860
Customer No.:	22242

Confirmation No. _____

CERTIFICATE OF MAILING

I hereby certify that this paper is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to the Commissioner for Patents, P.O Box 1450, Alexandria, VA 22313-1450, on this date.

1/12/05 (Date)

Kenneth H. Sample
Registration No. 25,747
Attorney for Applicant(s)

Mail Stop AMENDMENT
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Transmitted herewith is an amendment/reply in the above-identified application.

☐ An Appendix including amended drawing figures labeled as "Annotated Marked-up Drawings" is enclosed.

☒ No additional fee is required.

Fee Calculation For Claims As Amended

	As Amended		Previously Paid For		Present Extra		Rate		Additional Fee
Independent Claims	5	-	5	**=	0	x $	200.00	= $	0.00
Total Claims	22	-	23	* =	0	x $	50.00	= $	0.00
Fee for Multiply Dependent Claims						$	360.00		
						Total Additional Fee		$	0.00

** At least 3

* At least 20

☐ Applicant(s) assert entitlement to Small Entity Status (37 C.F.R. § 1.27), thus reducing the fee by half to: $ 0.00

Application No. 09/925,867
Reply to Office Action of July 14, 2004

☐ A check in the amount of $____ is enclosed.

☐ Charge $_____ to Deposit Account No. 06-1135.

☒ The Commissioner is hereby authorized to charge any additional fees which may be required in this application under 37 C.F.R. §§1.16-1.17 during its entire pendency, or credit any overpayment, to Deposit Account No. 06-1135. Should no proper payment be enclosed herewith, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 06-1135. A duplicate copy of this sheet is enclosed.

1/12/05
Date

Kenneth H. Samples
Registration No. 25,747

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ATTORNEY DOCKET NO. 71860

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: James J. Fitzgibbon)
)
Appln. No.: 09/925,867)
)
Filed: August 9, 2001)
)
Title: METHOD AND APPARATUS FOR)
A ROLLING CODE LEARNING)
TRANSMITTER)
)
Group Art)
Unit: 2122)
)
Examiner:)

CERTIFICATE OF MAILING

I hereby certify that this paper is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this date.

1/12/05
Date

Kenneth H. Samples
Registration No. 25,747
Attorney for Applicant(s)

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

RESPONSE TO OFFICE ACTION

Dear Sir:

This is in response to the Office Action dated July 14, 2004 in the above-identified application.

In the drawing: a separate attachment includes a Request for Approval of Proposed Drawing Changes.

Amendments to the Abstract are shown on page 2.

Amendments to the Specification begin on page 3 of this paper.

Amendments to the Claims reflected in the listing of claims which begin on page 9 of this paper.

Amendments to the Drawings begin on page 16 of this paper and include four attached sheets.

Remarks begin on page 17 of this paper.

Separate attached sheet of the Abstract begin on page 21.

Amendment to the Abstract

A barrier movement operator system having a receiver for receiving, learning and responding to transmitted rolling code ~~type~~ access codes; ~~at least one trained transmitter for operating the system by transmitting a rolling code type access code to the receiver, at least one learning transmitter for learning the rolling code type access code from said trained transmitter in order to operate the system, a controller for evaluating the relationship between the learning transmitter rolling type access code and the trained transmitter rolling type access code, and a device for providing a barrier movement in response to access codes received by the receiver.~~ The barrier movement operator provides a method and apparatus for ~~of~~ learning valid security codes by a security code receiver comprising ~~the steps of~~ receiving a first previously learned security code and beginning a learn mode operation in response thereto~~, then~~ within a predetermined period of time, receiving a second security code, having a predetermined relationship to the first security code; and storing a representation of the second security code as a valid security code.

Amendments To The Specification:

Please amend the paragraph beginning at line 5 of page 5 to read as follows:

Referring now to the drawings and especially to FIG. 1, more specifically a movable barrier door operator, or garage door operator is generally shown therein and referred to by numeral 10 includes a head unit 12 mounted within a garage 14. A barrier moving activating receiver 80 includes a routine for responding to rolling access codes. The access code routine, when used with other routines and apparatus of the system, is capable of properly learning and responding to received access codes. An access code learning device of the receiver 80 enables an access code learning mode of operation. When the access code learning mode is entered and a rolling access code is first received and learned, the rolling access routine is executed to control the opener and to learn new rolling access codes. More specifically, the head unit 12 is mounted to the ceiling 16 of the garage 14 and includes a rail 18 extending therefrom with a releasable trolley 20 attached having an arm 22 extending to a multiple paneled garage door 24 positioned for movement along a pair of door rails 26 and 28. The system includes a hand-held transmitter unit 30 adapted to send signals to an antenna 32 positioned on the head unit 12 and coupled to the receiver 80 as will appear hereinafter, and a learning transmitter 31. In this description the transmitter 30, which is the transmitter already known to the operator, is called the original transmitter, and the transmitter 31 is called the learning transmitter. An external control pad 34 is positioned on the outside of the garage having a plurality of buttons thereon and communicate via radio frequency transmission with an antenna

32 of the head unit 12. A switch module 39 is mounted on a wall of the garage. The switch module 39 is connected to the head unit 12 by a pair of wires 39A~~a~~. The switch module 39 includes a light switch 39B~~b~~, a lock switch 39C~~c~~ and a command switch 39D~~d~~. An optical emitter 42 is connected via a power and signal line 44 to the head unit 12. An optical detector 46 is connected via a wire 48 to the head unit 12.

Please amend the paragraph beginning at line 15 of page 8 to read as follows:

Referring now to FIGS. 8A-8B, the flow chart set forth therein describes the operation of the original transmitter 30. A rolling code from non-volatile memory is incremented by three in step 500, followed by the rolling code being stored (step 502) for the next transmission from the transmitter when a transmitter button is pushed. The order of the binary digits in the rolling code is inverted or mirrored in a step 504, following which in a step 506, the most significant digit is converted to zero effectively truncating the binary rolling code. The rolling code is then changed to a trinary code having values 0, 1 and 2 and the initial trinary rolling code is set to 0. It may be appreciated that it is trinary code, which is actually used to modify the radio frequency oscillator signal and the trinary code is best seen in FIG. 7. It may be noted that the bit timing in FIG. 7 for a 0 is 1.5 milliseconds down time and 0.5 millisecond up time, for a 1, 1 millisecond down and 1 millisecond up and for a 2, 0.5 millisecond down and 1.5 milliseconds up. The up time is actually the active time when carrier is being generated. The down time is inactive when the carrier is cut off. The codes are

assembled in two frames, each of 20 trinary bits, with the first frame being identified by a 0.5 millisecond sync bit and the second frame being identified by a 1.5 millisecond sync bit.

Please amend the paragraph beginning at line 31 of page 8 to read as follows:

In a step 510, the next highest power of 3 is subtracted from the rolling code and a test is made in a step 512 to determine if the result is equal to zero. If it is, the next most significant digit of the binary rolling code is incremented in a step 514, following which flow is returned to the step 510. If the result is not greater than 0, the next highest power of 3 is added to the rolling code in the step 516. In the step 518, another highest power of 3 is incremented and in a step 520, a test is determined as to whether the rolling code is completed. If it is not, control is transferred back to step 510. If it has, control is transferred to step 522 to clear the bit counter. In a step 524, the blank timer is tested to determine whether it is active or not. If it is not, a test is made in a step 526 to determine whether the blank time has expired. If the blank time has not expired, control is transferred to a step 528 in which the bit counter is incremented, following which control is transferred back to the decision step 524. If the blank time has expired as measured in decision step 526, the blank timer is stopped in a step 530 and the bit counter is incremented in a step 532. The bit counter is then tested for odd or even in a step 534. If the bit counter is not even, control is transferred to a step 536 where the bit of the fixed code bit counter divided by 2 is output. If the bit counter is even, the rolling code bit counter divided by 2 is

output in a step 538. By the operation of 534, 536 and 538, the rolling code bits and fixed code bits are alternately transmitted. The bit counter is tested to determine whether it is set to equal to 80 in a step 540. If it is, the blank timer is started in a step 542. If it is not, the bit counter is tested for whether it is equal to 40 in a step 544. If it is, the blank timer is tested and is started in a step 543 ~~544~~. If the bit counter is not equal to 40, control is transferred back to step 522.

Please amend the paragraph beginning at line 19 of page 9 to read as follows:

The receiver 80 is shown in detail in FIG. 5. RF signals may be received by the controller 70 at the antenna 32 and fed to the receiver 80. The receiver 80 includes a pair of inductors 170 and 172 and a pair of capacitors 174 and 176 that provide impedance matching between the antenna 32 and other portions of the receiver. An NPN transistor 178 is connected in common base configuration as a buffer amplifier. The RF output signal is supplied on a line 220 ~~200~~, coupled between the collector of the transistor 178 and a coupling capacitor 222 ~~220~~. The buffered radio frequency signal is fed via the coupling capacitor 222 to a tuned circuit 224 comprising a variable inductor 226 connected in parallel with a capacitor 228. Signals from the tuned circuit 224 are fed on a line 230 to a coupling capacitor 232 which is connected to an NPN transistor 234 at its base. The collector 240 of transistor 234 is connected to a feedback capacitor 246 and a feedback resistor 248. The emitter is also coupled to the feedback capacitor 246 and to a capacitor 250. A choke inductor 256 provides ground potential to a pair of

resistors 258 and 260 as well as a capacitor 262. The resistor 258 is connected to the base of the transistor 234. The resistor 260 is connected via an inductor 264 to the emitter of the transistor 234. The output signal from the transistor is fed outward on a line 212 to an electrolytic capacitor 270.

Please amend the paragraph beginning at line 24 of page 10 to read as follows:

The microcontroller 85 responds to signals received from the wall switch 39, the transmitter 30, the up and down limit switches, the obstruction detector and the RPM signal to control the motor 106 and the light 81 by means of the light and motor control relays 104. The on or off state of light 81 is controlled by a relay 105b, which is energized by pin P01 of microcontroller 85 and a driver transistor 105A~~a~~. The motor 106 up windings are energized by a relay 107B~~b~~ which responds to pin P00 of microcontroller 85 via driver transistor 107A~~a~~ and the down windings are energized by relay 109B~~b~~ which responds to pin P02 of microcontroller 85 via a driver transistor 109A~~a~~.

Please amend the paragraph beginning at line 30 of page 10 to read as follows:

Each of the pins P00, P01 and P02 is associated with a memory mapped bit, such as a flip/flop, which can be written and read. The light can thus be turned on by writing a logical "1" in the bit associated with pin P01 which will drive transistor 105A~~a~~ on energizing relay 105B~~b~~, causing the lights to light via the contacts of relay 105B~~b~~ connecting a hot AC input 135 to the

light output 136. The status of the light 81 can be determined by reading the bit associated with pin P01. Similar actions with regard to pins P00 and P02 are used to control the up and down rotation of motor 106.

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of the claims in the application:

(Amended)

1. (Amended) A method of learning valid security codes by a security code receiver, comprising steps of:

- receiving a first security code;

- beginning a learn mode operation in response to the receipt of the first security code;

- within a predetermined period of time, after the beginning of the learn mode operation receiving a second security code, having a predetermined relationship to the first security code; and

- storing a representation of the second security code as a valid security code.

2. (Amended) A method for automatically learning a rolling type access code from a learning transmitter by a barrier movement operator, comprising steps of:

- receiving by the barrier movement operator a first rolling ~~type~~ access code from a first transmitter, the first rolling access code having a fixed identification portion recognized by the operator;

- beginning a learn mode operation in response to receipt of the first rolling access code by the barrier movement operator;

- saving a representation of the first rolling ~~type~~ access code received from the first transmitter in the barrier movement operator;

- receiving the first rolling ~~type~~ access code from the first transmitter by the learning transmitter, and storing a representation of the first rolling ~~type~~ access code therein;

- receiving, by the operator, a second rolling ~~type~~ access code from the learning transmitter within a predetermined period of time after ~~from~~ receiving the first rolling ~~type~~ access code;

- comparing the second rolling ~~type~~ access code with the first rolling ~~type~~ access code saved in the operator;

- storing the representation of the second rolling ~~type~~ access code in the operator when the comparing step identifies that a predetermined relationship exists between the first rolling ~~type~~ access code and the second rolling ~~type~~ access code.

3. (Amended) The method according to claim 2, comprising ~~wherein, during the first receiving step, after operator receives the first access code for~~ moving the barrier~~, the operator further receives a signal from the first transmitter to stop~~ and stopping the barrier on a mid-travel position after the first receiving step ~~level~~, and this barrier position is being recorded as a starting point for the learning process.

4. (Amended) The method in accordance with claim 2, wherein each of the first rolling ~~type~~ access code and the second rolling ~~type~~ access code comprises a rolling code portion and at least one fixed identification portion.

5. (Amended) The method in accordance with claim 4, wherein the first rolling ~~type~~ access code comprises a fixed identification portion recognized by the operator.

6. (Amended) The method according to claim 5, wherein said predetermined relationship exists when the second rolling ~~type~~ access code comprises substantially the same fixed identification portion as the first rolling ~~type~~ access code, and the second rolling ~~type~~ access code is next in sequence to the first rolling code access code.

7. The method according to claim 6, wherein the fixed identification portion is a transmitter number identification portion.

8. (Amended) The method according to claim 6, wherein the fixed identification portion is a transmitter ~~type~~ identification portion.

9. (Amended) The method according to claim 2, wherein, prior to receiving a first rolling ~~transmitter~~ access code by the operator, a barrier is closed while the first transmitter and the learning transmitter are placed between the barrier and the barrier movement operator.

10. (Amended) The method according to claim 9, wherein, after receiving the first rolling code from the first transmitter to open the barrier, the operator further receives a signal from the first transmitter to stop the barrier on a mid-travel level, and this barrier position is being recorded as a starting point for a learning mode.

11. (Amended) The method according to claim 10, wherein the second rolling code from the learning transmitter is being saved in the operator only if time between last operation of the barrier by the first transmitter and receipt of transmission from

the learning transmitter by the operator is within some predetermined time limits.

12. (Amended) A method for automatically learning a new transmitter rolling ~~type~~ access code by a barrier movement operator, comprising steps of:

- sending a first rolling ~~type~~ access code from a previously known transmitter to the operator;

- starting an operator auto learn mode by activating the operator in response to the first rolling ~~type~~ access code received by the operator and saving the first rolling ~~type~~ access code in the operator;

- storing a representation of the first rolling code in a learning transmitter;

- within a predetermined time limit, receiving by operator, a second rolling ~~type~~ access code derived by the learning transmitter from the stored representation of the first rolling ~~type~~ access code; and

- saving the second rolling ~~type~~ access code in the operator, when both the second rolling ~~type~~ access code and the first rolling ~~type~~ access code saved in the operator have a correlated fixed identification portion, said fixed identification portion being recognizable by the operator, and the second rolling code is next in sequence to the first rolling code saved in the operator.

13. (Amended) The method according to claim 12, wherein the second rolling ~~type~~ access code further comprises <u>an</u> ~~a type~~ identification portion identifying the learning transmitter.

14. (Amended) The method according to claim 13, further comprising step of identifying, by operator, the second rolling ~~type~~ access code as coming from a learning transmitter.

15. (Original) The method according to claim 14, wherein the second transmitter access code is saved in the operator when identified as an access code received from a learning ~~type~~ transmitter within some predetermined time limits.

16. (Original) The method according to claim 15, wherein, after receiving the first access code from the previously known transmitter to move the barrier, the operator further receives a signal from the known transmitter to stop the barrier on a mid-travel level, and this barrier position is being recorded as a starting point for the auto learn mode.

17. (Amended) A barrier movement operator system, comprising:

a receiver for receiving, learning and responding to transmitted rolling code ~~type~~ access codes;

at least one trained transmitter for operating the system by transmitting a rolling code ~~type~~ access code to the receiver, the rolling code including a fixed identification portion recognized by the system;

at least one learning transmitter for learning the rolling code ~~type~~ access code from said trained transmitter in order to operate the system;

a controller for evaluating relationship between a learning transmitter rolling ~~type~~ access code and <u>the</u> ~~a~~ trained transmitter rolling ~~type~~ access code; ~~and~~

a timer to run time between last operation of the barrier by the trained transmitter and receipt of transmission from the learning transmitter by the system; and

a device for providing a barrier movement in response to access codes received by the receiver.

18. (Amended) The operator system in accordance with claim 17, wherein the rolling ~~type~~ access code learned by the learning transmitter from the trained transmitter includes the fixed identification portion recognized by the system.

19. (Amended) The operator system according to claim 18, wherein the fixed identification portion of the rolling ~~type~~ access code is a trained transmitter number identification.

20. (Amended) The operator system according to claim 19, wherein the fixed identification portion of the rolling ~~type~~ access code is a transmitter type identification.

21. The operator system according to claim 17, wherein the controller is implemented using a programmable microcontroller.

22. (Cancel)

23. (Amended) A method for modifying a rolling ~~type~~ operation code for a barrier movement operator, comprising steps of:

- receiving by the operator a first rolling ~~type~~ operation code from ~~an original learning~~ a transmitter;

- beginning a learn mode of the operator upon receipt of the first rolling operation code

- saving the first rolling ~~type~~ operation code in the operator;

- modifying the first rolling ~~type~~ operation code by a learning transmitter;

- ~~within a predetermined period of time from the first receiving step,~~ receiving ~~a~~ the modified rolling ~~type~~ operation code from the learning transmitter, the modified rolling operation code having a predetermined relationship with the first rolling operation code;

- storing the modified rolling ~~type~~ operation code in the operator when received within a predetermined period of time after the beginning of the learn mode; and

- ending the learn mode the predetermined period of time after the beginning of the learn mode.

Amendments to the Drawings:

A separate attachment includes a Request for Approval of Proposed Drawing changes of Figs. 3,4,6A and 8A.

Attachment: Replacement Sheets

REMARKS

Claims 1-23 were present for examination in the present application. The abstract has been objected to as having more than 150 words and including a second paragraph. The abstract has been re-drafted as shown above and is also presented on a separate attached sheet.

Drawing Objections

The drawing has been objected to as not including reference characters mentioned in the description. Page 5, line 24 mentions a receiver 80 which is properly referenced in Fig. 2 and no amendments are proposed. Page 5 near line 24 has been changed to correct 39a, 39b, 39c and 39d to 39A, 39B, 39C and 39D for consistency with the drawing. Figure 3 is being corrected to show reference 108 for consistency with page 6, line 39. Reference number 600 is being added to Fig. 4 for consistency with page 7, line 23. Page 9 of the description is being corrected to mention a line 220 which is connected to a coupling capacitor 222 for consistency with Fig. 5. Page 10 of the text is being amended to correct several references having lower case letter to references having upper case letters for drawing consistency. Please note that switch 151 is shown in Fig. 6A.

The drawing is also objected to as containing reference characters not shown in the text. The objection to Fig. 1 is corrected by adding the reference numeral 16 to page 5, line 12 of the text. The line 40 of Fig. 2 is referred to at page 5, line 33 of the text. The light 81 of Fig. 3 is already included at page 10, lines 22 and 23 of the text. Fig. 4 is being corrected to delete reference numerals 606, 623, 624 and 630. The lines 82 of Figs. 5 and 6A are already shown in the text at

page 6, line 29. The reference characters 385, 387 and 369 are being removed from Fig. 6A and the relay logic line 102 of Fig. 6A is already discussed at page 6, line 38 of the text. The designation of step 502 is being added to page 8 of the text at line 17 and the reference numeral 508 is being removed from Fig. 8A. Lastly, the second reference character 544 appearing at page 9, line 12 of the text is being changed to 543. Applicant believes that the above noted changes to the text and drawings correct all situations objected to in the drawing by the Examiner.

Claims 2,3,4-6, 12-15,17-20 and 23 are rejected to by the Examiner as unclear. All of the above claims, except 3, are rejected for the use of the word "type". All occurrences of the word type in the claims have been deleted in response to the 112 indefinitives rejection. Further, claim 3 has been amended to correct any antecedent problems.

Art Rejections

Claims 1,2,4-6,8, 17-18 and 20 stand rejected under 35 U.S.C. 103(a) in view of U.S. Patent 6,703,941 to Blaker, U.S. Patent 5,949,349 to Farris and U.S. Patent 5,661,804 to Dykema et al. Although claim 22 is stated as rejected under 35 U.S.C. 103 in Section 7 of the Office Action no art is specifically applied to it and Section 9 of the Office Action specifically sets forth reasons for its allowability. Accordingly, claim 22 is considered objected to in the present response.

Claims 3,9-11, 16 and 22 stand objected to, but would be allowable if rewritten in independent form including the limitations of their respective parent claims. Claim 22 depends directly from claim 17 which has been amended to include all the limitation of claim 22 and thus, is in allowable form as amended.

Claims 18-21 are also asserted to be allowable due to their dependence on claim 17. Claim 3, 9-11 and 16 are left in dependent form herein due to the asserted allowability of their parent claims.

The present office action does not contain a specific application of the cited references to independent claim 12 or claims 13-16 which depend therefrom. Accordingly, these claims have been amended only in view of the 35 U.S.C. 112 rejection thereof, and it is asserted that claims 12-16 are allowable as they now stand.

The remaining independent claims 1,2 and 23 have been amended to clarify that a learn mode operation, during which codes can be learned by the operator, begins in response to the receipt of a first code and that a second code will be learned (stored) when it bears a predetermined relationship to the first code and is received within a predetermined period of time after receipt of the first code (claim 2) or within a predetermined period of time after the beginning of the learn mode (claims 1 and 23). None of the cited references or their combination teaches or suggests the beginning of a learn mode operation, in response to the receipt of a first security code. Accordingly, the independent claims 1,2 and 23 are not obvious in view of the references. Claims 3-11 are asserted to be allowable due to their dependence on claim 2.

In view of the foregoing, applicant asserts that all claims 1-21 and 23 as amended are allowable.

The Commissioner is hereby authorized to charge any additional fees which may be required in this application under 37 C.F.R. §§1.16-1.17 during its entire pendency, or credit any overpayment, to Deposit Account No. 06-1135. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or

even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 06-1135.

Respectfully requested,

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Abstract

A barrier movement operator system having a receiver for receiving, learning and responding to transmitted rolling code access codes. The barrier movement operator provides a method and apparatus for learning valid security codes by a security code receiver comprising receiving a first previously learned security code and beginning a learn mode operation in response thereto, within a predetermined period of time, receiving a second security code, having a predetermined relationship to the first security code; and storing a representation of the second security code as a valid security code.